

Abstract Submitted
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Nanoporous polystyrene samples through the selective removal of low- M_w component in PS/PS blend samples JAMES FORREST, CHAD DALEY, SONIA ZHANG, SHARON YANG, STEFAN IDZIAK, University of Waterloo — We present here a novel technique for producing low density nanoporous polystyrene samples. The method hinges upon the ability to selectively dissolve away the low- M_w component from blend samples which consist of high- and low- M_w atactic polystyrenes with drastically different M_w 's. Given the chemical similarity between the two components it is possible to prepare blend samples while avoiding microscopic phase separation. Removal of the low- M_w component then leaves behind a sample with nanoscopic voids on the order of 10's of nm. This is in contrast to porous polymer materials prepared through the removal of chemically distinct polymer species, where larger scale pores are the end result. Tuning of the initial fraction of the low- M_w component allows for variation in the density of the porous material; ellipsometric measurements indicate samples with densities lower than 0.5 g/cm^3 . Characterization of the samples using ellipsometry, AFM, and X-ray diffraction will be discussed.

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